

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

- - - - - X

07 Civ. 1960 (WCC)

SANDRA MORGAN and PHILLIP MORGAN, :

ECF CASE

Plaintiffs, :

- against - :

**OPINION
AND ORDER**

SHOKRY F. GIRGIS, :

Defendant. :

- - - - - X

A P P E A R A N C E S :

SANDERS, SANDERS, BLOCK, WOYCIK,
VIENER & GROSSMAN, P.C.

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Conner, Senior D.J.:

Plaintiffs Sandra Morgan (“Morgan”) and Phillip Morgan bring suit against defendant Shokry F. Girgis for negligence and related claims. The action arises out of an automobile accident on an exit ramp of the Hutchinson River Parkway in the Town of Harrison, New York. Morgan was driving her car on the ramp when a car operated by defendant collided with her car from behind. As a result of the accident, Morgan claims to have suffered injuries including: “cervical subluxation and bulging discs at the C3-4, C4-5 and C5-6 levels, requiring surgery consisting of cervical discectomy, bone fusion and instrumentation in the spine . . . ; post-surgery Horner’s Disease on the right side of her face and right eye; and a tear of the labrum of the left shoulder.” (Pl. Mem. Supp. Mot. Preclude Test. at 2.)

Defendant seeks to introduce at trial the testimony of a biomechanical engineer, Robert S. Fijan, Ph.D. (“Dr. Fijan”), who is expected to testify that this collision would not have generated enough force to cause the injuries of which Morgan now complains. Plaintiffs move to exclude Dr. Fijan’s testimony on the grounds that it lacks sufficient factual basis and that Dr. Fijan is not qualified to offer an expert opinion on the cause of Morgan’s injuries because he is not a medical doctor. For the following reasons, the motion is granted in part.

DISCUSSION

I. Governing Law

FED. R. EVID. 702, which governs the admissibility of expert testimony, provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in

the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Rule 702 requires a district court to serve a “gatekeeping” function by ensuring that “an expert’s testimony both rests on a reliable foundation and is relevant to the task at hand.” *Amorgianos v. Nat’l R.R. Passenger Corp.*, 303 F.3d 256, 265 (2d Cir. 2002) (quoting *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 597 (1993)); see also *Ruggiero v. Warner-Lambert Co.*, 424 F.3d 249, 253 (2d Cir. 2005). The court must first determine whether the proffered testimony is relevant within the meaning of FED. R. EVID. 401 – that is, whether it has “any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.” *Amorgianos*, 303 F.3d at 265 (internal quotation marks and citations omitted). The court should then apply the criteria of Rule 702 to determine whether the evidence is sufficiently reliable. *Id.* In *Daubert*, the Supreme Court provided several factors for evaluating the reliability of scientific evidence.¹ These include: whether the theory or technique involved “can be (and has been) tested,” whether it “has been subjected to peer review and publication,” the technique’s “known or potential rate of error” and whether the theory or technique is generally accepted in the relevant scientific community. *Daubert*, 509 U.S. at 593-94.

Notwithstanding these specific criteria, the Second Circuit has observed that “the *Daubert* inquiry is fluid and will necessarily vary from case to case.” *Amorgianos*, 303 F.3d at 266. The purpose of the inquiry is “to ensure that the courtroom door remains closed to junk science while admitting reliable expert testimony that will assist the trier of fact.” *Id.* at 267. To be admissible,

¹ The Court subsequently extended the *Daubert* analysis to expert testimony based on “technical” and “other specialized” knowledge. See *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999) (quoting FED. R. EVID. 702).

the “expert’s analysis [must] be reliable at every step,” although a “minor flaw in an expert’s reasoning . . . will not render an expert’s opinion *per se* inadmissible.” *Id.* The proponent of the proffered expert testimony bears the burden of demonstrating its admissibility by a preponderance of the evidence. *Celebrity Cruises, Inc. v. Essef Corp.*, 434 F. Supp. 2d 169, 175 (S.D.N.Y. 2006).

II. Dr. Fijan’s Qualifications and Report

Dr. Fijan is a mechanical engineer specializing in biomechanics. (Pl. Mem. Supp. Mot. Preclude Test., Ex. A (“Fijan Report”)).² He holds a Ph.D. and an M.S. in mechanical engineering from the Massachusetts Institute of Technology and a B.S.E. in engineering science from the University of Florida. (*Id.*) He served as an assistant professor in the Department of Mechanical Engineering and Applied Mechanics at the University of Michigan from 1990 to 1994. (*Id.*) From 1994 to 2002 he worked as an engineer in the private sector, during which time he “[p]articipated in full-scale vehicle-to-vehicle crash tests and vehicle sled tests including positioning of anthropomorphic test dummies and analysis of dynamic data.” (*Id.*) He has also “[p]erformed hundreds of analyses related to motor vehicle accident reconstruction, occupant kinematics, injury mechanics and human injury tolerance.” (*Id.*) Dr. Fijan presently works as an independent engineering consultant and expert witness. (*Id.*)

Dr. Fijan has prepared an “accident reconstruction and biomechanical analysis” of the accident that is the subject of this case. (*Id.*) The Report is based on Dr. Fijan’s review of the police accident report, repair estimates for Morgan’s car, copies of photographs of Morgan’s car,

² Dr. Fijan’s background information is taken from his resume, which is attached to his Report. The pages of the report are not numbered.

information the parties have disclosed pursuant to FED. R. CIV. P. 26, transcripts of Morgan's and defendant's depositions and Morgan's medical records. (*Id.*) Dr. Fijan also made use of information about the cars involved in the accident, such as "vehicle-specific geometry, inertia and stiffness information." (*Id.*)

At the time of the accident, Morgan was driving a 1998 Acura Integra LS, and defendant was driving a 1999 Lincoln Town Car. Dr. Fijan estimates that, with Morgan in it, the Acura weighed approximately 2,808 pounds and, with defendant and his passenger in it, the Lincoln weighed approximately 4,326 pounds. (*Id.*) According to the police report, the passenger's-side front bumper of defendant's car made contact with the driver's-side rear bumper of Morgan's car. (*Id.*) The police report indicated either no damage or "superficial" damage to Morgan's car; Morgan later received estimates of \$313.70 and \$510.63 to repair damage to the rear bumper and back panel of her car. (*Id.*) Both cars were driven away from the scene of the accident. (*Id.*) Defendant testified that his car was undamaged. (*Id.*)

Dr. Fijan's analysis is based on the change in a vehicle's speed that occurs during a collision. This change is known as "delta-V." (*Id.*) There is a linear relationship between delta-V and the "post-impact residual crush" observable in a vehicle. (*Id.*) As Dr. Fijan explains:

In cases where substantial residual crush can be observed and estimated for one or both vehicles . . . such crush measurements can be used along with appropriate estimated vehicle stiffness parameters to ascertain the delta-V sustained by a vehicle during an impact. When residual crush is nonexistent, these methods can still be used to determine an *upper bound* for the delta-V associated with an impact.

(*Id.* (emphasis in original)). Dr. Fijan obtains vehicle stiffness parameters from the results of publicly available crash tests, such as those performed by the National Highway and Traffic Safety Administration, the Consumers Union and the Insurance Institute for Highway Safety. (*Id.*) Based

on the estimated stiffness parameters, weights and impact orientations of the vehicles involved here, Dr. Fijan estimates that defendant's car was traveling at approximately five miles per hour when it struck plaintiff's car, resulting in "a maximum increase in speed of about 4 mph." to plaintiff's car. (*Id.*) Dr. Fijan does not believe that plaintiff's car moved laterally in any appreciable amount as a result of the impact. (*Id.*)

The impact, Dr. Fijan believes, caused Morgan to move towards the rear of her vehicle (and into the seat-back) at no more than four miles per hour. (*Id.*) This motion and corresponding contact against the seat-back caused force to be distributed across Morgan's back and shoulders, but did not result in "any appreciable concentrated force [being] applied to her head, neck, shoulders, or back." (*Id.*) After moving backward, Morgan then moved forward towards her original position in the seat, "but at a substantially reduced relative speed" of about two miles per hour or less. (*Id.*)

Dr. Fijan's opinion that the collision could not have caused or contributed to Morgan's injuries is based on his comparison of the amount of force applied to Morgan's body during the collision with the amount of force applied to her body during various every-day activities such as walking, bending and lifting. For example, Dr. Fijan believes that "the maximum seatbelt forces that could have been applied to Ms. Morgan's body during the subject accident (about ten pounds or less) were substantially smaller than forces her body experiences while rolling over in bed." (*Id.*) Likewise, he concludes that the forces that could have been applied to Morgan's left shoulder in the accident were "within the range of normal everyday shoulder joint forces" and "significantly smaller than the shoulder joint forces she would have experienced during everyday reaching and lifting activities." (*Id.*) Dr. Fijan therefore concludes that "the pathologies of Ms. Morgan's left shoulder were unaffected by the subject motor vehicle accident." (*Id.*)

Dr. Fijan reaches a similar conclusion regarding the forces applied to Morgan's back. The forces applied to her cervical spine were "substantially smaller than corresponding forces and stresses that occur during everyday activities such as looking overhead." (*Id.*) The forces to which Morgan's lumbar spine was subjected were "only a small fraction of low back forces associated with many everyday bending and lifting activities." (*Id.*) Dr. Fijan states that "the forces Ms. Morgan generated in her cervical and lumbar spines during the subject accident were well below thresholds for damage to the bones, disks, and ligaments of the spine, as reported in the biomechanics literature." (*Id.*) According to Dr. Fijan's review of the literature, "in the absence of adjacent bony damage, bulges and herniations of spinal discs do not result from a single acute event." (*Id.*) Since the accident involved only one instance of force that was not strong enough to cause damage to bone, ligament or disc, Dr. Fijan is of the opinion that the accident "did not contribute in any significant way to disc bulges or herniations or other associated pathologies of Ms. Morgan's cervical or lumbrosacral spine." (*Id.*)

III. Analysis

Plaintiffs seek to have Dr. Fijan's testimony limited or excluded on two grounds. They argue that his opinion is unreliable because it lacks sufficient factual basis and that, because he is not a medical doctor, Dr. Fijan is not qualified to opine on the cause of Morgan's injuries.

A. The Basis of Dr. Fijan's Opinion

Plaintiffs argue that Dr. Fijan's testimony is unreliable because he did not visit the scene of the accident, inspect the vehicles involved, view a photograph of defendant's car or interview

plaintiff to discuss her injuries. (Pl. Mem. Supp. Mot. Preclude Test. at 5.)

We find this argument to be without merit. Dr. Fijan has based his report on the application of his extensive knowledge of the principles of biomechanics to the facts of this accident as disclosed in the police report and Morgan's and defendant's deposition testimony. The list of academic and scholarly sources Dr. Fijan has drawn on – as well as those he has authored – indicates that the theories and principles involved in his analysis have been the subject of extensive peer review and testing. (*See* Fijan Report, "References"); *Daubert*, 509 U.S. at 593-94. Moreover, plaintiffs have not disputed any of the factual bases of Dr. Fijan's analysis or suggested any reason why his failure to conduct a first-hand investigation makes his opinion unreliable. Dr. Fijan had access to extensive information about the events of the accident and the vehicles and persons involved. There are no gaps in this factual record apparent to the Court. The sources Dr. Fijan utilized provided him with sufficient factual basis for his opinion, and he has applied reliable principles to those facts in a reliable manner. *See* FED. R. EVID. 702.

B. Dr. Fijan's Qualification to Testify About Injury Causation

We must next consider whether Dr. Fijan is qualified to offer an opinion on the cause of Morgan's injuries. Although Dr. Fijan appears to be a highly qualified biomechanical engineer, he does not hold a medical degree. And, of course, an expert witness must be qualified to offer an opinion on the topic on which he seeks to testify. As the Second Circuit put it: "because a witness qualifies as an expert with respect to certain matters or areas of knowledge, it by no means follows that he or she is qualified to express expert opinions as to other fields." *Nimely v. City of New York*, 414 F.3d 381, 399 n.13 (2d Cir. 2005).

Several courts faced with this issue have concluded that a biomechanical engineer is qualified to offer testimony regarding the forces generated by certain accidents and the likely effects of such forces on the human body, but not to offer an opinion on whether or not the accident at issue could have caused the plaintiff's injuries. *See Laski v. Bellwood*, 2000 WL 712502, at *3-4 (6th Cir. May 25, 2000); *Smelser v. Norfolk S. Ry. Co.*, 105 F.3d 299, 305 (6th Cir. 1997), *abrogated on other grounds*, *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997); *Layssard v. United States*, 2007 WL 4144936, at *3 (W.D. La. Nov. 20, 2007); *Bowers v. Norfolk S. Corp.*, 2007 WL 2187396, at *32 (M.D. Ga. July 26, 2007); *Wilcox v. CSX Trans., Inc.*, 2007 WL 1576708, at *13 (N.D. Ind. May 30, 2007); *Shires v. King*, 2006 WL 5171770, at *3 (E.D. Tenn. Aug. 10, 2006); *Demar v. D.L. Peterson Trust*, 2006 WL 2987314, at *5 (N.D.N.Y. Oct. 13, 2006); *Luman v. CSX Transp., Inc.*, 2005 U.S. Dist. LEXIS 46011, at*2-3 (S.D. Ohio Nov. 29, 2005); *Hernandez v. City of Albuquerque*, 2004 WL 5520000, at *6-9 (D.N.M. Jan. 29, 2004).

In *Laski*, the defendant's car struck the plaintiff's car from behind while the latter was stopped at a red light. *See* 2000 WL 712502, at *1. Over the plaintiff's objection, the trial court allowed the defendant's biomechanical expert, Dr. Cheng, to testify about the causal relationship between the accident and the plaintiff's injuries. *See id.* at *3. The court of appeals rejected the plaintiff's argument that "any opinion as to causation should be disallowed due to Dr. Cheng's expertise in biomechanics as opposed to medicine." *Id.* (emphasis in original). The court held that "Dr. Cheng was qualified to give general opinions about causation," but not to give "medical opinions." *Id.* (emphasis in original). The court upheld the decision to allow Dr. Cheng to testify about "the forces necessary to produce certain types of back injuries, and the forces at work in a rear-impact car accident, considering a driver's position at the moment of impact, the speed of the

car which struck the driver's, and many other factors.”³ *Id.* at *4. Regarding the qualifications of biomechanical engineers generally, the court observed: “biomechanics are qualified to determine what injury causation forces are in general and can tell how a hypothetical person's body will respond to those forces, but are not qualified to render medical opinions regarding the precise cause of a specific injury.” *Id.* at *3 (quoting *Smelser*, 105 F.3d at 305); *see also Shires*, 2006 WL at *3 (holding that biomechanical engineer “clearly should be allowed to testify regarding the forces applied to plaintiff's head . . . and how a *hypothetical* person's body would re-pond [sic] to that force.”) (emphasis in original).

We find the reasoning of *Laski*, *Shires* and the other cases cited above persuasive and adopt it here. Dr. Fijan is clearly qualified to testify about the nature and amount of force generated by the accident in question and the observed effect of that force on a human body in comparable accidents. In doing so he may offer comparisons between that force and the forces to which the human body is subject during other activities. Such testimony would be relevant, helpful to the jury and within Dr. Fijan's area of expertise. But because Dr. Fijan is not a medical doctor, he may not testify as to whether the accident caused or contributed to any of plaintiff's injuries.

CONCLUSION

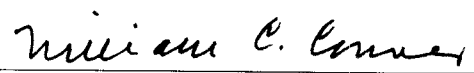
For all of the foregoing reasons, plaintiffs' motion to preclude the testimony of Robert S. Fijan, Ph.D. is granted in part. Dr. Fijan is precluded from testifying as to whether the accident that is the subject of this action caused or contributed to plaintiff Sandra Morgan's injuries. Dr. Fijan

³ The court held that the decision to allow Dr. Cheng to testify that the accident did not cause the plaintiff's injury was harmless error given the “vast amount” of other evidence in the record supporting Dr. Cheng's opinion. *See id.*

may offer testimony regarding the amount of force generated by the accident and the observed effect of such force on the human body in comparable accidents.

SO ORDERED.

Dated: White Plains, New York
May 16, 2008



Sr. United States District Judge